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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,775	06/26/2003	George Pontis	40-001120US	8132
22798	7590	10/05/2006	EXAMINER	
QUINE INTELLECTUAL PROPERTY LAW GROUP, P.C. P O BOX 458 ALAMEDA, CA 94501			OLSEN, KAJ K	
			ART UNIT	PAPER NUMBER
			1753	

DATE MAILED: 10/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/608,775

Applicant(s)

PONTIS ET AL.

Examiner

Kaj K. Olsen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 65-91 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 65-91 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12-05-03;3-15-04;8-12-05.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application
- ☐ Other: ____.

DETAILED ACTION

Information Disclosure Statement

1. A reference citation was crossed off the IDS of 3-14-2004 because this reference had been cited in an earlier IDS.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 67, 74, 76, 80, 84-86 and 89 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure, which is not enabling.

4. With respect to claims 67, 74, 76, 84-86 and 89, applicant does not appear to have any support for the metal of the metal silicide as being nickel, platinum, chromium, aluminum, copper, gold or tantalum. The only discussion concerning the metal for the metal silicide is paragraph 0083, which discusses the use of titanium. Although these various metals are mentioned elsewhere in the specification (e.g. paragraphs 0011 and 0096), there does not appear to be any disclosure linking the disclosure of these metals to the metal utilized for the metal silicides.

5. With respect to claim 80, applicant does not appear to have ever disclosed the use of glucose oxidase specifically or even the use of enzymes generally in the originally filed disclosure.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 65, 67-79, 82, 84, 87-89 and 91 are rejected under 35 U.S.C. 102(a) as being anticipated by Li et al (Advanced Materials, 2-2002, 14 pp. 218-221).

8. Li discloses a device comprising a nanowire having at least one ohmic contact of a metal silicide. See first paragraph of p. 218 and fig. 4. Li further discloses that this metal silicide is useful as electrical contacts for the nanowire (first paragraph of p. 218 and fig. 4). Whatever is to be electrically connected to the metal silicide would constitute the claimed electrical contact for the device.

9. With respect to the device having a sacrificial layer that becomes the ohmic contact, that constitutes a process for constructing the ohmic contact and doesn't constitute a further structural distinction over the preceding claims.

10. With respect to the dimensions of the nanowire, the nanowires of Li are typically 20 nm diameter. See the first full paragraph of p. 219.

11. With respect to the device being a nanosensor, absent further definition of the structure of the device, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

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12. With respect to the method claims (those limitations not covered above), because Li discloses the use of metal silicides as an ohmic contact, then Li inherently meets the claimed reduction in ohmic contact resistance as evidenced by the instant invention.

13. With respect to the junction forming a sacrificial layer, the created ohmic contact of Li reads on the defined sacrificial layer. Although Li never refers to its metal silicide layer as a sacrificial layers, the claims never define any process of sacrificing anything with this layer. Absent any step of steps of processing this sacrificial layer in a manner that reads free of the processing of Li, Li's silicide layer reads on the defined sacrificial layer of the claims.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 66, 83 and 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Ozawa (USP 4,385,433).

16. Li set forth all the limitations of the claims, but did not explicitly recite the use of either Ti or Ta as the metal for the metal silicide. Ozawa teaches that silicide contacts can be constructed with other metals such as Ti or Ta. See claim 2. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Ozawa for the ohmic contacts of Li because the substitution of one known form of metal silicide for another requires only routine skill in the art.

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17. Claim 80 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Cui et al (Science, 293, pp. 1289-1292, 2001) and Shimada et al (USP 4,218,298).

18. Li set forth all the limitations of the claims, but did not explicitly disclose a nanosensor comprising glucose oxidase. Cui teaches that nanowires can be constructed into nano field effect transistors (nanoFET) relying on the nanowire as the gate material for monitoring changes in pH. See fig. 1 as an example. Shimada discloses that pH sensitive FET devices can be utilized for the detection of glucose by the addition of glucose oxidase to the pH sensitive gate region. See col. 6, ll. 31-55. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Cui and Shimada for the device of Li so as to extend the utility of the disclosed nanowires to highly sensitive glucose sensors.

19. Claims 81 and 90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Cui,

20. With respect to claim 81, Li did not explicitly disclose the construction of a nanosensor for detection of a change in charge. Cui discloses that a pH sensor can be constructed out of nanowires by modifying a nanowire with functional groups such that the functional group undergoes a change in charge as a function of the pH. See fig. 1. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Cui for the device of Li so as to increase the utility of the device to the highly sensitive detection of pH. With respect to the nanowires being an array, this would read on the mere scaling up of the set forth nanoFET to include either other nanoFETs or to include a plurality of nanowires for each nanoFET. It would have been obvious to one having ordinary skill in the art at the time the invention was made to either scale up the nanoFET or to include addition nanowires to each

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nanoFET, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

21. With respect to claim 90, Li did not explicitly disclose that the junction comprise one or more dopants. Cui teaches that silicon nanowires can be constructed to be p-doped with components like boron presumably to increase the conductivity of the nanowire. See paragraph bridging pp. 1289 and 1290. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to dope the nanowire of Li so as to improve its conductivity. With respect to junction comprising dopant materials, because Li constructs the junction out of a portion of the silicon nanowire itself (see fig. 4), the created junction would contain dopant if the nanowire itself were also doped.

22. Claim 85 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of Scott et al (USP 4,476,482).

23. Li set forth all the limitation of the claims, but did not explicitly recite the presence of a platinum silicide. Scott teaches that junction silicides can also be constructed out of platinum silicide. See claim 2. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Scott for the method of Li because the substitution of one known metal for another known metal in silicides requires only routine skill in the art.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Friday from 8:00 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AU 1753
October 2, 2006


KAJ K. OLSEN
PRIMARY EXAMINER